E/ECE/324
E/ECE/TRANS/505 } Rev.1/Add.84/Amend.2

11 August 1998

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON THE BASIS OF THESE PRESCRIPTIONS */

(Revision 2, including the amendments entered into force on 16 October 1995)

Addendum 84: Regulation No. 85

Amendment 2

Supplement 2 to the original version of the Regulation - Date of entry into force: 14 May 1998

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF INTERNAL COMBUSTION ENGINES OR ELECTRIC DRIVE TRAINS INTENDED FOR THE PROPULSION OF MOTOR VEHICLES OF CATEGORIES M AND N WITH REGARD TO THE MEASUREMENT OF THE NET POWER AND THE MAXIMUM 30 MINUTES POWER OF ELECTRIC DRIVE TRAINS

UNITED NATIONS

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*/ Former title of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

Paragraph 3.4., should be deleted.

Paragraph 4.4.1., footnote 1/, amend to read:

"1/ ..... 8 for the Czech Republic, ... 22 for the Russian Federation, 23 for Greece, 24 (vacant), 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32-36 (vacant), 37 for Turkey, 38-39 (vacant) and 40 for The former Yugoslav Republic of Macedonia. Subsequent numbers ..... to the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, ..."

Paragraph 5.2.3., amend to read:

"5.2.3. The fuel used shall be the following:"

Insert new paragraphs 5.2.3.1. to 5.2.3.4., to read:

"5.2.3.1. For positive ignition engines fuelled with petrol:

The fuel used shall be the one available on the market. In any case of dispute, the fuel shall be one of the reference fuels defined by CEC 2/ for petrol fuelled engines, in CEC documents RF-01-A-84 and RF-01-A-85.

5.2.3.2. For positive ignition engines fuelled with LPG:

5.2.3.2.1. In the case of an engine with self-adaptive fuelling:

The fuel used shall be the one available on the market. In any case of dispute the fuel shall be one of the reference fuels specified in annex 8;

5.2.3.2.2. In the case of an engine without self-adaptive fuelling:

The fuel used shall be the reference fuel specified in annex 8 with the lowest C3-content, or

5.2.3.2.3. In the case of an engine labelled for one specific fuel composition:

The fuel used shall be the fuel for which the engine is labelled.

5.2.3.2.4. The fuel used shall be specified in the test report.

2/ European Coordinating Council

5.2.3.3. For positive ignition engines fuelled with natural gas:

5.2.3.3.1. In the case of an engine with self-adaptive fuelling:

The fuel used shall be the one available on the market. In any case of dispute the fuel shall be one of the references fuels specified in annex 8;

5.2.3.3.2. In the case of an engine without self-adaptive fuelling:

The fuel used shall be the one available on the market with a Wobbe index at least 52.6 MJm^{-3} (20°C, 101.3 kPa). In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8, i.e. the fuel with the highest Wobbe Index, or

5.2.3.3.3. In the case of an engine labelled for a specific range of fuels:

The fuel used shall be the one available on the market with a Wobbe index at least 52.6 MJm^{-3} (20°C, 101.3 kPa) if the engine is labelled for the H-range of gases, or at lease 47.2 MJm^{-3} (20°C, 101.3 kPa) if the engine is labelled for the L-range of gases. In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8 if the engine is labelled for the H-range of gases, or the reference fuel G23 if the engine is labelled for the L-range of gases, i.e. the fuel with the highest Wobbe Index for the relevant range, or

5.2.3.3.4. In the case of an engine labelled for one specific fuel composition:

The fuel used shall be the fuel for which the engine is labelled.

5.2.3.3.5. The fuel used shall be specified in the test report.

5.2.3.4. For compression ignition engines

The fuel used shall be the one available on the market. In any case of dispute, the fuel shall be the reference fuel defined by CEC for compression ignition engines, in CEC document RF-03-A-84."

Paragraphs 6. to 6.2., amend to read:

"6. CONFORMITY OF PRODUCTION

The conformity of production procedures shall comply with those set out in the Agreement, Appendix 2 (E/ECE/324 - E/ECE/TRANS/505/Rev.2), with the following requirements:

6.1. Engines approved under this Regulation shall be so manufactured as to conform to the type approved.

6.2. The minimum requirements for conformity of production control procedures set forth in annex 7 to this Regulation shall be complied with."

Paragraphs 6.3. to 6.4.2., should be deleted.

Annex 1,

Insert a new item 1.1., to read:

"1.11. Fuel: leaded petrol / unleaded petrol / diesel oil / LPG / NG 3/"

Items 1.11. to 1.13. (former), renumber as items 1.12. to 1.14.

Insert new items 3.2.3. to 3.2.4.6.3., to read:

"3.2.3. By LPG fuelling system : yes/no 3/
3.2.3.1. Approval number according to Regulation No. 67 and documentation: . . . . . .
3.2.3.2. Electronic Engine Management Control Unit for LPG-fuelling:
3.2.3.3. Make(s): . . . . . .
3.2.3.4. Type: . . . . . .
3.2.3.5. Emission related adjustment possibilities: . . . . . .
3.2.3.6. Further documentation:
3.2.3.6.1. Description of the safeguarding of the catalyst at switch-over from petrol to LPG or back: . . . . . .
3.2.3.6.2. System lay-out (electrical connections, vacuum connections compensation hoses, etc): . . . . . .
3.2.3.6.3. Drawing of the symbol: . . . . . .

3.2.4. By NG fuelling system: yes/no 3/
3.2.4.1. Approval number according to Regulation No. 67: . . . . . .
3.2.4.2. Electronic Engine Management Control Unit for NG-fuelling:
3.2.4.3. Make(s): . . . . . .
3.2.4.4. Type: . . . . . .
3.2.4.5. Emission related adjustment possibilities: . . . . . .
3.2.4.6. Further documentation:
3.2.4.6.1. Description of the safeguarding of the catalyst at switch-over from petrol to NG or back: . . . . . .
3.2.4.6.2. System lay-out (electrical connections, vacuum connections compensation hoses, etc.): . . . . . .
3.2.4.6.3. Drawing of the symbol: . . . . . "

Annex 3, insert a new item 11.3., to read:

"11.3. Engine fuel requirements: leaded petrol / unleaded petrol / diesel fuel / NG / LPG: 2/: . . . . . "

Insert a new annex 8, to read:

"Annex 8

1. TECHNICAL DATA OF THE LPG REFERENCE FUELS

		Fuel A	Fuel B	Test method
Composition:				ISO 7941
C3	% vol.	30 ± 2	85 ± 2	
C4	% vol.	balance	balance	
<C3, >C4	% vol.	max. 2 %	max. 2 %	
Olefines	% vol.	9 ± 3	12 ± 3	
Evaporative residue	ppm	max. 50	max. 50	NFM 41-015
Water content		none	none	visual inspect.
Sulphur content	ppm mass */	max. 50	max. 50	EN 24260
Hydrogen sulphide		none	none	
Copper corrosion	rating	class 1	class 1	ISO 625 1 **/
Odour		Characteristic	Characteristic	
MON		min. 89	min. 89	EN 589 Annex B

*/ Value to be determined at standard conditions (293.2 K (20°C) and 101.3 kPa).

**/ This method may not accurately determine the presence of corrosive materials if the sample contains corrosion inhibitors or other chemicals which diminish the corrosivity of the sample to the copper strip. Therefore, the addition of such compounds for the sole purpose of biasing the test method is prohibited.

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2. TECHNICAL DATA OF NG REFERENCE FUELS

		G20	G23	G25
Composition:				
CH4	% vol	100	92.5	86
N2	% vol	0	7.5	14
Wobbe Index */	MJ/m^3	53.6 ± 2%	48.2 ± 2%	43.9 ± 2%

*/ Based on the gross calorific value and calculated for 0°C.

The constituting gases of the mixtures shall have at least the following purities:

N_2 : 99%
CH_4: 95% with a total content of hydrogen, carbon monoxide and oxygen below 1 % and a total content of nitrogen and carbon dioxide below 2%

The Wobbe Index is the ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions:

$$Wobbe\ \ Index = H_{gas} \frac{\sqrt{\rho_{air}}}{\sqrt{\rho_{gas}}}$$

with H_{gas} = calorific value of the fuel in MJ/m^3 at 0°C

ρ_{air} = density of air at 0°C

ρ_{gas} = density of fuel at 0°C

The Wobbe Index is said to be gross or net according to whether the calorific value uses is the gross or net calorific value."